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User Manual

NCSU Concrete Materials Database Program

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Preface

This guide explains how to use the NCSU Concrete Materials Database Program. It shows how to query the database, and describes how to input and update data.

HOW THIS GUIDE IS ORGANIZED

This guide is divided into two parts:

- . Part I. User Manual
- . Part II. Reference

PART I : USER MANUAL Exercises that help you understand how to query the database and descriptions that help you understand how to input and update data.

PART II: REFERENCE Information concerning separate operations and fields.

HOW TO USE THIS MANUAL

Two methods are used in this manual. Examples are used in query operations, while procedures are listed for input operations. It is best to read it while sitting at your computer, where you can enter the exercise examples and see the results on your screen.

CONVENTIONS USED IN THIS MANUAL

The following conventions are observed in this manual:

Text that must be entered exactly are shown in capital letters and in Courier font, e.g. AUTH.

Text that are displayed on the screen such as prompts are shown in italics.

SUPPLEMENTARY MANUALS YOU MAY USE

This program is constructed using several of Oracle's tools. While this manual provides essential information, at times it may be helpful to refer to the Oracle publications listed below:

- SQL*PLUS User Guide
- SQL*FORMS Operator Guide
- SQL*MENU User Guide
- ORACLE FOR 123 User Guide.

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PART I USER MANUAL

1

Login

Login procedure for the NCSU Materials Database is simple. First, make sure you are in the working directory (drive:/shrp is the default). Then, follow the steps below to access the program.

1. Enter SHRP and then press <Enter> to start the program.
2. You are prompted to enter your username and password. Enter your username and press <Enter>. Then enter your password and press <Enter>.

Alternately, you can enter USER1 as the username and USER1 again as the password to gain access to the program's query mode. USER1/USER1 is the public username and password that come with the program. However, your database administrator (DBA) may have deleted the public username and password for security reason. If neither methods succeed, consult your DBA or refer to Chapter 6.

2

Application Menus

In this chapter you will learn how to move around the Application Menus, the NCSU Database program's menu system. The different levels of access that the program employs to ensure security will also be discussed.

Once you have logged in successfully, you will be viewing the APPLICATION MENU screen. Depending on your assigned user level you are accessing all or a sub-set of the program. There are three user levels:

1. Level 1 users can only access query mode
2. Level 2 users can access query mode and input mode
3. Level 3 users can access the entire program which includes query mode, input mode, and maintenance mode.

There are several layers of menus that can guide you to the desired operation. The complete Application Menu chart is shown in Appendix A.

Move Around the Menus

You can navigate through the Application Menus with two interchangeable methods of selecting options: number entry and cursor position entry. To select an option you 1) enter the number that corresponds to that option, and then press the <Enter> key; 2) move the cursor to that option, and then press the <Enter> key.

There are two function keys that you will use quite often in the Application Menus. <F2> key

displays help messages for a option, and <Home> key jumps the program to the previous menu screen.

Go ahead and try to move around the Application Menus to get a feel of the menu system. If you select an option that starts an operation, you can exit that operation and return to the menu screen by entering <Esc> or <ctrl>-z.

Additional Information

NCSU Database's Application Menus are constructed using Oracle's SQL*Menu tool. You can refer to SQL*Menu User's Guide to get better acquainted with how to use the menus.

Summary

In this section you have learned how to log in the program and how to move through the Application Menus. In summary,

1. Enter SHRP to start the program.
2. Enter your username and your password.
3. Move the cursor to the desired option, and then press <Enter> .
4. Press <F2> to receive help message.
5. Press <Home> to go to the previous menu.

3

Learning How To Query Data

In this chapter you will learn how to query the NCSU Database based on a sample database. The NCSU Database is comprised of three sub-databases: Conclusion Database, Table A and Table B Database, and Formula/Graph Database.

The Conclusion Database contains investigators' conclusions from a research article. The Table A and Table B Database contains numeric data on mixes and load responses reported in research articles; these data are stored in Table A and Table B. The Formula/Graph Database contains information on graphs and formulas reported in research articles.

In this chapter, step-by-step procedures are used to show you how to query each type of the databases.

3.1 Sample Database

When the NCSU Database program was installed, a set of data was input into the database for demonstration purpose. A portion of the example database is shown in Appendix B. These data, which will be used in the examples in this chapter, are composed of three parts:

A total of 30 conclusions from 16 research articles are input into the Conclusion Database.

Partial numeric data from 2 research articles are input into the Table A and Table B Database.

A total of 8 formula/graph information sets from 2 articles are input.

After you finish these examples, you can remove these data by running the batch file 'REMOVE'. This will erase all the data in the database.

3.2 Example On Querying Conclusion Database

Goal

You want to retrieve conclusions that have been drawn from research papers concerning creep that have been published after 1983. You also want to send the queried result to a printer, by year and within the year by author's name in ascending alphabetical order.

Steps

1. After you have logged in successfully, navigate through the Application Menus to the QUERY CONCLUSION DATABASE menu screen.
2. Move the cursor to the first option, then press <F2> to view help message. Return to menu screen by pressing any key.
3. Select the first option (Execute Query Statement). A help message box and a WHERE> prompt appears. Read the help message to get a general idea on how to enter a search criteria.
4. At the prompt, enter the where clause, YEAR>=1983 AND KW='CREEP' to indicate that you want to search articles that were published after 1983 and are on creep. Press <Enter> to execute the query. The program should then indicate 5 records are updated which means 5 conclusions satisfied the search criteria. The screen at this point should resemble Figure 3-1(a). Press <Enter> to return to the menu screen.

If you have an input error, the program will display an error message. You can exit the operation by pressing <ctrl>-z, then select the option again and redo Step 4.

5. Select option #2 (Display Query Result). A form like Figure 3-1(b) appears on the screen. This form displays those conclusions that have been selected. Press <Dn> key five times to browse through these five conclusions. Then go back to the first conclusion by pressing <Up> key five times.
6. Each conclusion has a number of keywords. Press <ctrl>-<PgDn>. The keywords associated with the displayed conclusion appears on the screen. Press <ctrl>-<PgUp> to return to the displayed conclusion. After finishing examining the conclusions and their keywords, press <Esc> to exit the form.

7. Select Option #3 and a new menu screen appears with three options. You can display the result to the screen, send it to the printer, or save it to a file. Select Option #2(Print to Printer).
8. After you select option #2, a new help message box and the ORDER> prompt appears on the screen. At this prompt, you need to provide the order in which result should be displayed. Enter YEAR,AUTH to tell the program to display result by year in ascending order, and within the year by author's name also in ascending order. Press <Enter> to continue. Then the message, -ready the printer-, appears. Make sure your printer is turned on. At this point, your screen should be like Figure 3-1(c).
9. Press <Enter> to start printing. Once printing is completed, the program automatically returns to the menu screen.

Summary

You have learned now how to query the conclusion database. In summary, to query the conclusion database:

1. Navigate through the Application Menus to the Query Conclusion Database screen.
2. Select Execute Query Statement option, and enter your where clause.
3. Select Display Query Result option, and browse through the result to make sure that is what you want.
4. Select Print Query Result option, and then select the option to print the query result to the screen, the printer, or a file.

3.3 Example On Querying Table A And Table B

Goal

You want to see what experimental data are available on the compressive strength that have water/cement ratio of 0.4 or less and are cured until testing at 28 days.

Preparation

Except the simplest search, most queries on Table A and Table B are rather complex. Therefore, it is best to formulate the query statement on paper first. To do that, you need to know the correct field names and the corresponding list of values given in Appendix C. Three kinds of information are needed. For our example,

The columns we want to display:

W_C_RATIO, CUR_TM, CHEM1_TP, STRGTH_TSTTP, ULT_STRS1

The where clause:

W_C_RATIO <= 0.4 AND CUR_TM=28 AND AGE_TST=28 AND
STRGTH_TSTTP='FC'

The order clause:

ULT_STRS1

Notice that the columns displayed do not have to be in the where clause or the order clause. However, it is advisable to display all relevant columns to make sure the queried result is as intended.

Steps

1. Navigate through the Application Menus to the Query Table A and B screen.
2. Select Option#1(Execute Query and Send to a File). By selecting this option, you are about to enter and execute a query and send the result to a file.
3. A new menu screen appears on the screen. On this menu screen you are asked to select one of the six options that matches your query statement. The rule on which option to select is always as follows: select the option that contains all the fields that are used, either in the column clause, the where clause, or the order clause. In our example, select Option#5 (Query involves Table A and Table B).
4. A help message box and a prompt, Enter values for columns> , appears on the screen. At this prompt, you are asked to enter the columns that you want to display on the screen. Enter W_C_RATIO, CUR_TM, CHEM1_TP, STRGTH_TSTTP, ULT_STRS1, then press <Enter> .
5. Another help message box and a different prompt, Where> , appears on the screen. At this prompt, you are asked to provide the where clause. Enter

W_C_RATIO <= 0.4 AND CUR_TM=28 AND AGE_TST=28 AND
STRGTH_TSTTP='FC'

Be sure you have entered all the information correctly. Do not press <Enter> in middle of the where clause. The program automatically wraps to the next line. Different parts of a field name are connected with the underscore, not the dash; the character strings have to be enclosed with single quotations. At this point, the screen should resemble the Figure 3-2(a). Press <Enter> to continue.

6. Another help message box and a different prompt, Order>, appears on the screen. At this prompt, you are asked to tell the program the order you want to display. Enter ULT_STRS1, telling the program to sort the data according to strength value in ascending order. Press <Enter> to start displaying the result on the screen. Five records should be selected.
7. If the result is not what you are looking for and you want to exit, press <ctrl>-z to go back to the menu screen. Let's assume the queried result is acceptable and you want to save it into a file. At the end of the displayed data, a message, <Enter> to continue, appears on the screen. Press <Enter>.
8. Another help message box and a different prompt, SAVE TO A FILE NAME (default ext. LST):, appears on the screen. At this prompt, you are asked to provide a filename to save the query result. Enter QRYDATA and press <Enter>, saving the resultant data to QRYDATA.LST under your working directory.
9. Another help message box and a different prompt, Enter values to the columns>, appears on the screen. At this prompt, you are asked to name the columns that you want to save. Be aware that the columns you specified in Step 3 have not been saved because those columns are used only for formulating the query statement. Enter BART_ID, W_C_RATIO, CUR_TM, AGE_TST, CHEM1_TP, ULT_STRS1, then press <Enter>. The screen will display the requested data as in Figure 3-2(b), and at same time, the program saves the data to a file.
10. You can save more columns to the file. At the end of displayed data, enter / and press <Enter> to regenerate the prompt, Enter values for columns>. Then you can enter seven more columns. In fact, you can save as many columns as you want by repeating this step. But for this exercise, let's stop and enter EXIT to exit and return to the menu.

QRYDATA.LST is a text file saved under your working directory. You can access and edit it by logging off the NCSU Database program and bringing the file up in any word processor program.

Summary

You have worked an example on how to query Table A and Table B. In summary, the procedures are as follows:

1. Work out precisely the query statement you want to do on paper first.
2. Navigate through the Application Menus to Query Table A and Table B screen and select the options that correspond your needs.
3. Enter the query information as requested.

4. If you made a mistake, you can exit to the menu at any time by enter <ctrl>-z, and then press <Enter>.

One disadvantage of this method of querying Table A and Table B is that whenever a mistake is made, you have to start over again. However, ORACLE FOR 123 provides a better alternative in querying table A and Table B. ORACLE FOR 123 utilizes the power of a spreadsheet in combination with Oracle's RDBM. If you can access ORACLE FOR 123, then you probably want to become familiar with it. In the next section the same example will be used to demonstrate the use of ORACLE FOR 123.

3.4 Example On Using Oracle For 123 To Query Table A And Table B

Goal

The goal is the same as in the last section. You want to see what experimental data are available on the compressive strength that have water/cement ratio of 0.4 or less and are cured until testing at 28 days.

Steps

1. Exit from the Application Menus
2. Type ORA123 and press <Enter>
3. Use normal Lotus procedures to bring up the file ABQRY.WK1. The help screen appears and you are prompted to enter your username.
4. Enter your username and press <Enter>. Then enter your password and press <Enter>. Unless you log in with correct username and password, you can not access the example data in the tables.
5. Browse through the help message to get a general idea on how to perform queries.
6. Press <alt>-s to prompt the user-defined commands.
7. Select the command COLUMNS. A table which lists out the field names and short explanations appears. These fields belong to the Base Table and Table A and Table B that you can access. You can browse through remaining fields by using the down cursor key. There should be a total of 114 entries.

8. Change 'N' to 'Y' in the DISP column where the column numbers are 48, 25, 42, 60, 16, and 66. 'Y' indicates to the program that the field is to be displayed. Make sure no other cells on the DISP column contain 'Y'. If they do, change them to 'N'.
9. Press <alt>-s again to bring up the user-defined commands. This time, select the command CRITERION/ORDER. This command will bring up a blank area with a left parenthesis at top left corner. You can enter the where clause and the order clause in this area. The left parenthesis is a reminder to you that the where clause needs to be enclosed by parenthesis.
10. Enter the where clause and the order clause as shown in Figure 3-3. Make sure the where clause is enclosed by parenthesis.
11. Press <alt>-s again and select the command EXECUTE. This command will execute the where clause and the order clause that you entered. If there is an input error, a message will appear and you can edit your where/order clauses and execute again.
12. Press <alt>-s again and select the command DATA. The program will display the data you have queried.

Summary

You have learned a different way of querying Table A and Table B, using ORACLE FOR 123. In summary,

1. Select the COLUMNS command, and select the fields you want to display.
2. Select the CRITERION/ORDER command, and enter the where/order clauses. Be sure to enclose the where clause by parenthesis to ensure correct query result.
3. Select the EXECUTE command. If there is an error, edit the where/order clauses.
4. Select the DATA command and see the data.

3.5 Example On Querying Formula/Graph Database

The procedure to query the Formula/Graph Database is identical to that of the Conclusion Database. Once you navigate through the Application Menus to the Query Formula/Graph Database screen, you can follow the same procedures as listed in Section 3.1. Therefore, it will not be repeated here.

For the where clause, enter YEAR > =1975 AND KW='STRESS-STRAIN RELATIONSHIP' and press <Enter>. And for the order clause, enter ART and press <Enter>. If you ask to send the result to print to the printer, the output should be as shown in Figure 3-4.

3.6 Figures

1. ART	article ID *	ART='Z1000'
2. AUTH	author's name	AUTH LIKE 'ZIA%
3. YEAR	year of publication	YEAR>=1979
4. TITLE	title of an article	
5. CONCL*	conclusion *	CONCL*=1
6. KW	keyword	KW='CREEP'

You can exit at any time by enter <ctrl>-z.

ENTER QUERY> YEAR>=1983 AND KW='CREEP'

5 Records Updated
<Enter> to return

FIGURE 3-1(a) CONCLUSION DATABASE WHERE CLAUSE

== CONCLUSION DATABASE DISPLAY SCREEN ==

ART_ID	CONCL#	PRINT
AUTHOR	YEAR	DATA
TITLE		
CONCLUSION		

FIGURE 3-1(b) CONCLUSION DATABASE DISPLAY SCREEN

1. ART	article ID *
2. AUTH	author's name
3. YEAR	year of publication
4. TITLE	title of an article
5. CONCL*	conclusion *
6. KW	keyword

ENTER ORDER> YEAR,AUTH

- Ready the printer - <Enter> to start

FIGURE 3-1(c) CONCLUSION DATABASE ORDER SCREEN

Enter columns' names that you want to display while formulating the query.

Example: AART_ID, ASPE_ID, CMT_TP, CMT_QTY

Keep the number of columns to maximum of 7 allows results to display across one screen.

You can exit at any time by enter <ctrl>-z.

Enter values for columns> W_C_RATIO, CUR_TM, CHEM1_TP, STRGTH_TSTTP, ULT_TRS1

Enter query statement here.

Example: CMT_TP='I' AND MIN_ADM_TP='FUME'

WHERE> W_C_RATIO<=0.4 AND CUR_TM=28 AND AGE_TST=28 AND STRGTH_TSTTP='FC'

FIGURE 3-2(a) TABLE A AND TABLE B EXAMPLE QUERY

ARTICLE ID #	WATER CEMENT RATIO	CURING TIME (days)	AGE @ TEST (days)	CHEMICAL ADMIX1 TYPE	ULTIMATE STRESS1
A2012	.300	28.00	28.000		10730.000
A2012	.340	28.00	28.000		11020.000
A2012	.360	28.00	28.000		11310.000
A2012	.270	28.00	28.000	SUPERPLASTICIZER	12905.000
A2012	.270	28.00	28.000	SUPERPLASTICIZER	13630.000

FIGURE 3-2(b) EXAMPLE QUERY RESULT(TABLES A AND B)

A	B	
	CRITERION	ORDER
1		
2		
3	(W_C_RATIO<=0.4 AND CUR_TM=28 AND AGE_TST=28	
4	AND STRGTH_TSTTP='FC')	
5	ORDER BY ULT_STRS1	
6		
7		
8		
9		
10		

FIGURE 3-3 CRITERION/ORDER SCREEN (ORACLE FOR 123)

SHRP C-205 FIGURE/GRAPH DATABASE QUERY RESULT

page: 1

Art_ID : A2009
F/G ID : G2
Year : 1981

Author : CARRASQUILLO, R. L.
Title : PROPERTIES OF HIGH STRENGTH CONCRETE SUBJECT TO SHORT-TERM LOADS
Dep Var : Stress
Ind Var1: strain (high strength)
Ind Var2: strain (medium strength)
Ind Var3: strain (normal strength)
Ind Var4:
Ind Var5:
Relation: Fig.2 Typical stress/strain curves of normal, medium, and high strength concrete
Note : stroke rate: 2,000 micro-in/min, 4"x8" cylinder

Art_ID : A2009
F/G ID : G3
Year : 1981

Author : CARRASQUILLO, R. L.
Title : PROPERTIES OF HIGH STRENGTH CONCRETE SUBJECT TO SHORT-TERM LOADS
Dep Var : stress
Ind Var1: strain (high strength)
Ind Var2: strain (medium strength)
Ind Var3: strain (normal strength)
Ind Var4:
Ind Var5:
Relation: Fig.3 Typical stress-strain curves of normal, medium and high strength concrete
Note : stroke rate: 2000 u-in/min; 4"x8" specimen cylinders

2 records selected.

FIGURE 3-4 EXAMPLE QUERY RESULT (FORMULA/GRAPH DATABASE)

4

Learning How To Input Data

In this chapter you will learn how to input and update data into the Conclusion Database, the Table A and Table B Database, and the Formula/Graph Database. All input forms contain extensive help messages and error checking mechanisms that can help you during input operation.

To input correctly you need to understand the purpose of each table and how tables are joined. You may want to refer to the report on the NCSU Concrete Materials Database Program, Chapter 3, NCSU Concrete Materials Database Structure, before you start this chapter.

4.1 General Procedures

All input forms in the program are developed using SQL*Forms, Oracle's form generation tool. Since input procedures are fairly simple and straight forward, no example will be used. Instead, a step by step procedure for each input operation is given to get you acquainted with the basic input steps. That should be enough for most of your needs. If you want to become more proficient, refer to the SQL*Forms Operator's Guide.

No matter which input form you use, the procedures are generally the same. In the following, some definitions specific to input forms will be stated first, and then a general outline on how to input, update and save the data will be described.

Some Definitions

A field in a form is a cell where you can enter data. You can go to the next field by pressing <Enter>, and go to the previous field by pressing <shift>-<Tab>.

A record is one row of data in a table. In a form you can go to the next record by pressing <PgDn>, or go to the previous record by pressing <PgUp>.

A block in a form is generally indicated by a single line box. A block usually contains one table. Some blocks are single record blocks, while others are multi-record blocks. You can go to next block in a form by pressing <ctrl>-<PgDn>, and go to the previous record by pressing <ctrl>-<PgUp>.

A page in a form generally means one screen. When screen changes, a different page appears. The current page number is always displayed at the bottom of the screen.

Operations

You can enter data into a field when the cursor is in that field. Then you can move to the next field by pressing <Enter>. Pressing <Enter> at the last field will bring the cursor back to the first field.

You can jump to the next record by pressing <PgDn>.

In some input forms, more than one block exist. Press <ctrl>-<PgDn> to go to the next block and press <ctrl>-<PgUp> to go to the previous block.

What you entered in the form would not be saved to the database until you commit the change. Press <F10> to commit the change. It is good practice to commit your changes frequently.

If you want to update information, you need to first query out the information from the database. Follow these steps:

1. Press <F7>, the [Enter Query] key. The entire input form goes blank.
2. Move the cursor to the field that you want to enter the search value. For example, in the Base table, enter Z1000 to search out the article with article ID number equal to Z1000. You can press the <Enter> key to go to different fields and enter other search values. In fact, you can use Boolean operators in the fields. Refer to the SQL*FORM Operator User's Guide, Chapter 3 for details.
3. After you have entered all the search values you want, press <F8>, the [Execute Query] key, to execute the query.

4. The form displays those records that satisfies the search criteria. Then you can edit those records by the procedure outlined above. Do not forget to commit your change.

4.2 Input Data

Input data into the Conclusion Database involves two input forms: 1) The Base Table Input Form where information such as the article ID number, author's name and article title are contained, and 2) the Conclusion Input Form where the conclusion and keywords are contained. Refer to Figures 8-1 and 8-2.

Steps

1. Navigate through the Application Menus to the Input Mode screen, and select the first option, Base Table Input Form.
2. A form that contains the Base Table appears on the screen. You can enter information on an article in this form, using the steps listed above. Make sure you commit the input by pressing <F10>.
3. You can exit the Base Input Form by pressing <Esc>.
4. Select the second option, Conclusion Input Form. In this form you can enter the conclusion and its keywords. Make sure you commit your input by pressing <F10>.
5. To enter keywords for a conclusion, press <ctrl>-<PgDn>. A reference keyword list is displayed on the right. You can either type in the keywords, or you can select keywords from the reference list. To select a keyword, press <Enter>. The cursor jumps to the reference keyword list block. Then use the <Up> or <Dn> cursor keys to browse the list. When the cursor rests on the reference keyword you want, press <Enter> again to accept. You can repeat this step to input all the keywords you need to enter. Make sure you commit your input by pressing <F10>.
6. Press <ctrl>-<PgUp> to go back to the conclusion block. If you have more conclusions for the article, you would repeat Steps 4-6.

4.3 Input Data Into Table A And Table B

Input data into Table A and Table B involves the Table A Input Form and Table B Input Form. In addition, if no entry for an article is made in the Base Table, you also need the Base Table Input Form.

Steps

1. Navigate through the Application Menus to the Input Mode screen. Select the third option, Table A Input Form.
2. When you input data into the form, keep in mind following items:
 - a) Pressing <Enter> when the cursor is in the last field will bring up the second page.
 - b) Instead entering values, you can select a value at those fields that contain a list, e.g. Cement Type. Press <F9> to display the list of values. Browse the list and make your selection by pressing <Enter>.
 - c) From second page on, cursor can not enter the first three fields, AART_ID, AMIX_ID, and ASPE_ID. They are for display only.
 - d) You can copy the previous value in the field by pressing <F3>.
3. Commit your input by pressing <F10>. Then press <Esc> to exit back to the menu screen.

The procedure of inputting data into Table B is identical, except one minor detail. Since Table B's size is large, Table B Input Form is divided to three parts. Column 48-58 is contained in Part I, column 59-89 in Part II, and column 90-114 in Part III. You can access each part by selecting the appropriate options.

Input data into Part I is identical to input data into Table A. In part II and Part III, in order to make sure no duplicate records are inputted, the program does not allow you to access column 48-51. You can enter and execute a query to bring out the data for the same article, then enter the data in Part II and Part III as usual.

4.4 Input Data Into Formula/Graph Database

The steps for inputting data into the Formula/Graph Database are the same as for inputting data into the Conclusion Database. You can follow the steps outlined in Section 4.2 to input data into the Formula/Graph Database.

4.5 Input Data in Maintenance Mode

There are three operations you can perform in the maintenance mode. You can enter new values

into the LIST OF VALUES table where Table A and Table B can access; you also can enter new reference keywords for the Conclusion Database and the Formula/Graph Database. Since steps are fairly simple and are very similar with other input forms, only an outline of the procedures is listed below.

List of Values Input Form

1. Navigate through the Application Menus to the Maintenance Mode screen, and select List of Value Table Input Form. A blank form with two columns appears on the screen.
2. Press <F7>[Enter Query]. The form goes blank. Move the cursor to the Field Name column. Enter the field name, then press <F8>[Execute Query]. The screen will display the existing values.
3. Move the cursor to the next blank cell, and enter the new value. Press <F10> to commit the input. You can exit by pressing <Esc>.

Reference Keyword Lists

For both Conclusion Database and Formula/Graph Database, the procedure to input new keyword into the reference keyword lists is the same, so it will be discussed together.

1. Navigate through the Application Menus to the Maintenance Mode screen, and select either Conclusion Reference Keyword List or Formula/Graph Reference Keyword List.
2. A form with the existing keywords appears. Move the cursor all the way to the next blank cell, and enter the new keyword. Press <F10> to commit the input.
3. You can exit to the menu screen by pressing <Esc>.

Warning on Updating Information in Maintenance Mode

Be extremely careful when you need to update any information in the maintenance mode. Remember that if you change a keyword in the reference keyword lists or a value in the List of Values table, queries based on the new keyword or value would not be able to select the correct records unless you update all the records. For example, if you change the keyword 'HIGH STRENGTH' TO 'HIGH-STRENGTH', a query using 'HIGH-STRENGTH' will not select those records.

PART II REFERENCE

5

Hardware And Software Requirements

In order to operate the NCSU Materials Database program correctly, your computer system must satisfy the following minimum requirements.

Hardware Requirement

If your system is workstations that are certified by Oracle, then you should not have any problem. However, if you are working on PCs, then you have to have enough ram memory and disk memory to install and run ORACLE RDBM, SQL*PLUS, SQL*MENU, and SQL*FORM. Generally speaking, you need at least a 286 machine with about 3 megabytes of extended memory and 10 megabytes of hard disk storage space. You can consult Appendix A of Oracle Application Tools for MS-DOS User's Guide for details.

Software Requirement

The following Oracle products are required to run the NCSU Database program:

ORACLE RDBM	version 5.1B	
SQL*PLUS	version 2.0	
SQL*MENU	version 4.1	
SQL*FORMS	version 2.3	
ORACLE FOR 123	version 1.0	(optional)

or their higher versions. Although ORACLE FOR 123 is not required to run the program, it is strongly recommended. In addition, to run ORACLE FOR 123, you must also have Lotus version 2.1. installed.

6

Installation and Assigning Users

This section shows how to install the NCSU Materials Database Program. The person who is to perform the installation and to add new users must have the DBA privilege.

Installation

Before you attempt to install the NCSU Database program, make sure your system has adequate hardwares and softwares. Make sure the ORACLE RDBM, SQL*Plus, SQL*Menu, and SQL*Forms are properly installed. And if you have ORACLE FOR 123, that should also be installed. If you need to install any of the products, refer to Oracle Application Tools for MS-DOS Getting Started booklet.

The installation process involves four steps: 1) copy program files to the working directory, 2) assign default users to the system, 3) install tables and example data, and 4) assign default users to the SQL*Menu. Only the user with the DBA privilege can perform installation. These four steps are described below:

1. Create a working directory where all the program files will be stored. For example, on a PC you can create a directory, named shrp, under drive c (c:/shrp), then copy all the files from the NCSU Concrete Materials Database Program micro diskette into the working directory.
2. Log in to SQL*Plus, then type @ASSIGN to execute the ASSIGN script. The ASSIGN script assigns 3 default users and their passwords; they are USER1/USER1,

USER2/USER2, USER3/USER3. In addition, a fourth user, the creator of the tables used in the program, is designated as CHI/CHI.

3. Log off SQL*Plus and return to DOS prompt, then type IMP to execute the Oracle import utility. A list of prompts will guide you through the steps. Accept defaults on all the steps. After all the tables are imported, exit the import utility by pressing . (period). Refer to Chapter 2, Oracle Utilities for detailed explanations.
4. The three default users must be assigned by the DBA to access SQL*Menu. The steps are listed below. Refer to Chapter 8, SQL*Menu User's Guide for detailed explanations.
 - 4.1 Type SQLMENU and then press <Enter> to start SQL*Menu.
 - 4.2 Select Option 1 (SQL*Menu Development of Dynamic Menus).
 - 4.3 Select Option 4 (Creating of a new user of SQL*Menu).
 - 4.4 On the Grantee field, enter USER1 and then press <Enter>. The cursor jumps to the Grant option field. Leave the field blank by pressing <Enter>.
 - 4.5 Repeat Step 4.4 two more times to assign USER2 and USER3.

Assigning New Users

The program comes with three default usernames and passwords. USER1/USER1 is the default username and password for level 1 users. Similarly, USER2/USER2 is for level 2 users and USER3/USER3 for level 3 users. A person with the DBA privilege has the authority to assign new users to the program and designate their user levels. On the other hand, he also has the authority to remove or change the default usernames and passwords for security reasons. Refer to Chapter 8, SQL*MENU User's Guide for procedures.

7

QUERY MODE

In this chapter each operation in the query mode will be described in detail.

7.1 Conclusion Database

Menu Screen Query Conclusion Database
Option #1 Execute Query Statement

Select this option to enter a search criteria in querying the Conclusion Database. A help message box and a prompt appears on screen as shown in Figure 7-1.

At The Prompt Enter the where clause using the nomenclatures in the help message box. The syntax for the where clause follows the SQL query expressions. Refer to SQL Language Reference Manual, Chapter 1, Page 12-14 for definitions and examples on SQL operators. In general, the operators used in the where clause are Boolean operators. Most common ones are =, >=, >, <=, <, !=, AND, OR, NOT, and LIKE. Remember all character strings must be enclosed by single quotations. Press <enter> to execute the query.

Six nomenclatures can be used in the search criteria:

ART is the article ID number. ART is comprised of a 5 character string. In general, Z1000-Z1999 are articles reviewed by Dr. Paul Zia. A2000-A2999 are by Dr. Shaub Ahmad,

and L3000-L3999 by Prof. Michael Leming.

AUTH is the first author's name of an article. AUTH is a character string.

YEAR is the year of publication. YEAR is a 4 digit number.

TITLE is the article title. TITLE is a character string.

CONCL# is the conclusion number for a particular article. In articles where there are more than one conclusion, conclusions are numerically sequenced starting at 1.

KW is the keyword. KW is a character string.

Execution Complete If syntactically correct, following messages will appears on the screen,
 records updated.
 <Enter> to return.

'_' indicates the number of conclusions selected. Press <Enter> to return to the menu screen.

Input Error If syntactically incorrect, the program will display an error message. Press <Enter> or <ctrl>-z to return to the menu screen and select this option again.

Limitation A total of 128 characters can be entered. Every nomenclature can only be used one time per where clause.

Menu Screen Query Conclusion Database

Option #2 Display Query Result

Select this option to view the conclusions that have satisfied the most recent query. A form like Figure 7-2 appears on the screen. You can browse through those conclusions and opt not print certain conclusions.

Browse You can browse through the selected conclusions. <Up> cursor key display the previous conclusion. The <Dn> cursor key goes to next the conclusion. The display order is always by article ID number, and within the article ID number, by the conclusion number.

Update Print Field The only field that can be updated in this form is the PRINT field. You can enter N to indicate that particular conclusion not to be printed. Make sure you press <F10> to commit the change.

See Keyword List To see the keyword list for a conclusion, Press <ctrl>-<PgDn>. Press <ctrl>-<PgUp> to return.

Menu Screen Print Query Result (Conclusion Database)

- Option #1 Print Query Result to Screen**
- Opyion #2 Print Query Result to Printer**
- Option #3 Print Query Result to file**

The procedures for these three options are very similar, thus will be discussed together. Select one of the three options to print the selected conclusions to the screen, to a printer, or to a file. Before printing, the program asks for the display order. A help message box and a prompt shown in Figure 7-3 appears on screen.

At The Prompt Enter the display order you want, and then press <Enter> to start printing. You can embed display orders; you also can display records either in ascending or descending order. The default order is ascending order. For example,

ENTER ORDER> YEAR DESC, AUTH

will display records by year in descending order, and within the year by first author's name in ascending order.

Input Error If an syntax error is made, an error message appears. You can return to the menu screen by pressing <ctrl>-z or <enter>. You can select this option again because query result is not lost.

Print To Printer If you select OPTION#2, the program prompts you to ready the printer. The prompt, -Ready the Printer- <enter> to start, appears on the screen. Press <Enter> to start printing.

Print To File If you select OPTION#3, the program prompts you to specify a filename. The prompt, FILE NAME TO SAVE(default extension .LST)>, appears on the screen. Enter a filename following MS-DOS naming convention and then press <enter>. The file will be saved under your working directory. Please note that if you name a file that already exists, the new file will overwrite the old file automatically.

7.2 Table A And Table B Database

Menu Screen #1	Query Table A and Table B and Save to File
Menu Screen #2	Query Table A and Table B and Save to Lotus
Options	all options under the two menu screens

Before You Start This method of querying Table A and Table B is provided mainly for those systems that do not have ORACLE FOR 123 installed. This method has some limitations. If your system has ORACLE FOR 123, it is better to use ORACLE FOR 123 to perform the query. Refer to Chapter 10 for details.

General Procedures Either you intend to save a result to a file or to Lotus in querying Table A and Table B, the procedures are similar, and thus will be discussed together. The program guides you through the query operation in five steps. The five steps are:

- 1) enter the columns you want to see on screen.
- 2) enter the where clause.
- 3) enter the order clause and then display result on screen.
- 4) enter the filename if the result is to be saved to a file.
- 5) enter the columns you want to save to the file or to Lotus.

Step 1 Select an option that matches the type of query you intend to perform. You should select the option in which all the fields that you will use is included. That includes field names in specifying columns, field names in the where clause, and field names in the order clause. After you press <Enter> key, a help message box and a prompt as in Figure 7-4 will appear on the screen.

At the prompt, enter up to seven field names, separated by commas, that you want to display on the screen. Then press <Enter> to proceed. The field names must correspond to the list in Appendix C and are capitalized. Be aware that the fields you entered at this prompt do not have to be contained in the where clause. The purpose of displaying these fields is for you to examine the query result and decide whether the result is satisfactory. They are not saved to a file or to Lotus.

Step 2 After you pressed <Enter>, another help message box and a new prompt as in Figure 7-5. appears. You are asked to enter the search criteria at this prompt.

At the prompt, enter the where clause and press <Enter> to proceed. The field names are used in the where clause. Make sure names agree with the list in Appendix C and character strings are enclosed in single quotations. Boolean operators are used in forming an expression. Most

common operators are: >, >=, <, <=, !=, AND, OR, and NOT. Refer to SQL Language Reference Manual, Chapter 1, Page 12-14 for definitions and examples.

Step 3 After you pressed <Enter>, another help message box and a new prompt as in Figure 7-6 appears. You are asked to enter the display order at this prompt.

At the prompt, enter the order clause and press <Enter> to proceed. You can embed display orders. You also can display records either in ascending or descending order. The default order is ascending order. For example, if you enter CUR_TM, ULT_STRS1 DESC, the program will display data by curing time in ascending order, and within the same curing time by ultimate stress in descending order.

Step 4 If the result is to be saved to a file, another help message box and a new prompt as in Fig. 7-7 appears. However, if the result is to be saved to Lotus, this prompt will not appear and you should skip to Step 5. At this prompt, you are asked to create a file to store the query result.

At the prompt, enter the filename and press <Enter>. The filename should follow MS-DOS naming convention. It is saved under the working directory. If there is an existing file with the same file name, the older version will be overwritten.

Step 5 Depending on data destination, one of the two help message boxes and prompts appears on screen.

If data destination is a file, at the prompt, enter the field names and press <Enter> to execute. Keep the number of fields to a maximum of 7 at a time so data can be saved across the width of a page. You can save more fields by entering '/' to regenerate the prompt. If you make an input error, an error message will display on the screen. Do not worry because your where clause and order clause are not lost; just enter '/' to regenerate the prompt and enter the correct field names again. Finally, you can exit at any time by pressing <ctrl>-z or enter EXIT and press <Enter>.

If data destination is Lotus spreadsheet, a help message box and a prompt as in Figure 7-8 appear on the screen. At the prompt, enter field names that are to be displayed in Lotus and press <Enter> to execute. Since the data destination is not a file, you can enter more than 7 fields at the prompt, but you can not add more fields by regenerating the prompt. On the other hand, if you have made an input error, you can try again by entering '/' to regenerate the prompt.

To access data in the Lotus spreadsheet, log off the Application Menus, boot up the Lotus spreadsheet and select the file 'ABVIEW'. The data will automatically show starting at cell A1.

Limitation At each prompt in the five steps described above, a maximum of 128 characters are accepted. Therefore, this method of querying Table A and Table B is viable only for a few columns and a simple where clause. In addition, until Step 4, there is no way to edit your input once <Enter> key is pressed. Therefore, if there is any input error, you have to restart by exiting the prompts and returning to the menu screen.

There are two ways you can overcome these limitations. First, you can query using ORACLE FOR 123. See next paragraph. Second, you can construct complex query using the option described in the next section.

A Better Alternative If you can access ORACLE FOR 123, a better query method that eliminate the above limitations is available. In this program a Lotus file containing a set of macros is available to assist you in querying Table A and Table B. Refer to Chapter 10 for details.

Menu Screen	Query Table A and Table B
Option #3	Execute complex query

Select this option if you want to enter a complex query when the previous options are not adequate. This option brings up the SQL*PLUS. In SQL*PLUS, you can formulate as complex and as long a query as you desire.

To formulate query in SQL*PLUS, you need to understand SQL syntax. In addition, you need to include the table joins yourself in the where clause. You can refer to SQL*PLUS User's Manual for SQL syntax. And you can refer to Appendix D to see the SQL expressions on table joins.

You may also want to read the NCSU Database Program Report to get a conceptual understanding of the program's data structures.

You are not totally on you own when you select this option. All the fields from Table A, Table B and Base Table have been defined: both the display column width and the column title. Thus, if you keep the number of columns to a maximum of seven, then the queried result can be displayed clearly across the width of the screen.

To tap the potential of the program, some queries can only be generated this way. Refer to Appendix E for details.

7.3 Formula/Graph Database

Menu Screen	Query Formula/Graph Database
Option #1	Execute Query Statement

Select this option to enter search criteria in querying the Formula/Graph Database. A help message box and a prompt appears on screen as shown in Figure 7-9.

The procedure for this option is almost identical to option#1 in Query Conclusion Database menu screen. Refer to that section for reference. The only difference is that, in this option, you use FG_ID# instead of CONCL#.

FG_ID# stands for Figure or Graph ID designation and is comprised of character string. In general, G1 stands for graph #1 of an article, and F1 stands for formula #1 of an article.

Menu Screen	Query Formula/Graph Database
Option #2	Display Queried Result

Select this option to view those conclusions that satisfy the most recent query. A form like Figure 7-10 appears on the screen. You can browse through these records and opt not to print certain records.

The operations used in this form is the same as in that of Query conclusion Database. Refer to that section for details. In this form following fields are displayed:

ART_ID The article ID number that was assigned in the Base table. A corresponding Lotus file with the same article ID number as its filename should be included in the data files provided. You can access the file through the normal Lotus spreadsheet commands.

FG_ID The formula or graph ID number. A designation with the F prefix stands for Formula, and G prefix stands for Graph. In the Lotus file, each graph should be identified with the formula/graph ID number.

PRINT print this record or not.

AUTHOR first author's name.

TITLE the article title

DEP VAR description of the dependent variable on a graph.

IND VAR descriptions of the independent variables on a graph. Up to five independent variables can be listed.

RELATION for graph, the description of the graph is displayed; for formula, the actual formula is displayed.

NOTE any additional information or comments.

Menu Screen	Print Query Result (Formula/Graph Database)
Option #1	Print Query Result to Screen
Option #2	Print Query Result to Printer
Option #3	Print Query Result to file

When you select one of the three options, a help message box and a prompt as shown in Figure 7-11 appears. The procedures here are identical to that of in Print Query Result screen for Conclusion Database. Refer to that section for details.

7.4 Print Reference Lists

Menu Screen	Print Reference List
Option #1	Select Field Names and List of Values to Print

You can select the field names and the their list of values to print to the printer. When this option is selected, a screen resembling Figure 7-12 appears.

Select Fields To Print The only item you can update is the PRINT column. Change to 'Y' if you want to print that field name and its list of values. You can preview the list of values for a field name by pressing <F9>. Press <Enter> to return.

Most Often Used Keys

<up>	move to next record
<down>	move to previous record
<F9>	see list of values
<F10>	commit

Menu Screen	Print Reference List
Option #2	Print Field Names and List of Values
Option #3	Print Reference Keyword List

Option #4 **(Conclusion Database)**
Print Reference Keyword List
(Formula/Graph Database)

Select option #2 to output the field names and their lists of values that were selected from the option #1, to the printer. You can use this printout to assist you in querying Table A and Table B.

Select option #3 to output the reference keyword list for the Conclusion Database to the printer. You can use this list to assist you in querying the Conclusion database.

Select option #4 to output the reference keyword list for the Formula/Graph database to the printer. You can use this list to assist you in querying the Formula/Graph database.

Once the printing is completed, the program automatically returns to the menu screen.

7.5 Figures

1. ART	article ID #	ART='Z1000'
2. AUTH	author's name	AUTH LIKE 'ZIA%'
3. YEAR	year of publication	YEAR>=1979
4. TITLE	title of an article	
5. CONCL#	conclusion #	CONCL#=1
6. KW	keyword	KW='CREEP'
You can exit at any time by enter <ctrl>-z.		
ENTER QUERY>		

FIGURE 7-1 EXECUTE QUERY SCREEN (CONCLUSION DATABASE)

--- CONCLUSION DATABASE DISPLAY SCREEN ---

ART_ID	CONCL#	PRINT
AUTHOR	YEAR	DATA
TITLE		
CONCLUSION		

FIGURE 7-2 DISPLAY QUERY RESULT SCREEN
(CONCLUSION DATABASE)

1. ART	article ID #
2. AUTH	author's name
3. YEAR	year of publication
4. TITLE	title of an article
5. CONCL#	conclusion #
6. KW	keyword

ENTER ORDER>

FIGURE 7-3 PRINT QUERIED RESULT SCREEN
(CONCLUSION DATABASE)

Enter columns' names that you want to display while
formulating the query.

Example: AART_ID, ASPE_ID, CMT_TP, CMT_QTY

Keep the number of columns to maximum of 7 allows
results to display across one screen.

You can exit at any time by enter <ctrl>-z.

Enter values for columns>

**FIGURE 7-4 HELP MESSAGE AND PROMPT FOR COLUMNS CLAUSE
(TABLE A AND TABLE B)**

Enter query statement here.

Example: CMT_TP='I' AND MIN_ADM_TP='FUME'

WHERE>

**FIGURE 7-5 HELP MESSAGE AND PROMPT FOR WHERE CLAUSE
(TABLE A AND TABLE B)**

Enter order statement here.

Example: ULT_STRS1, CUR_TM

ORDER>

**FIGURE 7-6 HELP MESSAGE AND PROMPT FOR ORDER CLAUSE
(TABLE A AND TABLE B)**

Following procedures save above query into a file. Please note:

1. Maximum of 7 columns can be selected at a time
2. Enter '/' to regenerate more columns
3. Enter '<ctrl>-z to exit.

/_or_EXIT>

**FIGURE 7-7 HELP MESSAGE AND PROMPT FOR ENTERING COLUMNS
TO SAVE TO A FILE (TABLE A AND TABLE B)**

Enter values for columns>

Enter columns' names that to be displayed in Lotus>

**FIGURE 7-8 HELP MESSAGE AND PROMPT FOR ENTERING COLUMNS
TO SAVE TO LOTUS (TABLE A AND TABLE B)**

1. ART	article ID #	ART='Z1000'
2. FG_ID	figure/graph ID #	FG_ID='F1'
3. AUTH	author's name	AUTH LIKE 'ZIA%'
4. YEAR	year of publication	YEAR>=1979
5. TITLE	title of an article	
6. KW	keyword	KW='CREEP'

You can exit at any time by <ctrl>-z.

ENTER QUERY>

FIGURE 7-9 EXECUTE QUERY SCREEN
(FORMULA/GRAPH DATABASE)

--- FORMULA/GRAPH DISPLAY SCREEN ---

ART_ID	FG_ID	PRINT
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
AUTHOR	YEAR	
<input type="text"/>	<input type="text"/>	
TITLE		
<input type="text"/>		
DEP VAR	<input type="text"/>	
IND VAR1	<input type="text"/>	
IND VAR2	<input type="text"/>	
IND VAR3	<input type="text"/>	
IND VAR4	<input type="text"/>	
IND VAR5	<input type="text"/>	
RELATION	<input type="text"/>	
NOTE	<input type="text"/>	

FIGURE 7-10 DISPLAY QUERY RESULT SCREEN
(FORMULA/GRAPH DATABASE)

1. ART	article ID #
2. FG_ID	figure/graph ID #
3. AUTH	author's name
4. YEAR	year of publication
5. CONCL#	conclusion #
6. KW	keyword

ENTER ORDER>

FIGURE 7-11 PRINT QUERY RESULT SCREEN
(FORMULA/GRAPH DATABASE)

PRINT (Y/N)	FIELD NO.	TABLE NAME	FIELD NAME	FIELD EXPLANATION

FIELD NAME	LIST OF VALUES	EXPLANATION

FIGURE 7-12 FORM FOR PRINTING FIELD NAMES AND LIST OF VALUES

8

Input Mode

In this chapter each input form will be described in detail.

8.1 Base Table Input Form

You can input general information about an article in the Base Table Input Form. The form is depicted in Figure 8-1.

ART_ID

Enter the article ID number in this field. It must be a distinct five character string.

YEAR

Enter the year of publication. YEAR should be a 4 digit number.

DATA

Enter Y or N to indicate whether numeric data is to be included in Table A and Table B.

AUTHOR'S NAME

Enter the first author's name; last name first, then the initials. For example, Ahmad, S. A. Up to 30 characters can be entered in this field.

TITLE

Enter the title of the article. Up to 240 characters can be entered in this field.

Most Commonly Used Keys

<F10>	commit
<enter>	next field
<F7>	enter query
<F8>	execute query

8.2 Conclusion Input Form

You can enter conclusions in this input form as well as assign keywords. The form is depicted in Figure 8-2.

ART_ID

Enter article ID number. It must be a five character string.

CONCL NO.

Enter the conclusion number for an article, starting with 1.

CONCLUSION

Enter up to 10 lines of text as shown on the screen.

KEYWORD

You can access the KEYWORD block by pressing <ctrl>-<Pgdn>. Select the desired keyword from the REFERENCE KEYWORD LIST block. You can do this by pressing the <Enter> key to jump to the REFERENCE KEYWORD LIST block. Then move the cursor to the desired keyword and press <Enter>. You can return to the main screen by pressing <ctrl>-<PgUp>.

Most Used Function Keys

<F10>	commit
<ctrl>-<PgDn>	go to next block
<ctrl>-<PgUp>	go to previous block
<enter>	next field
<F7>	enter query
F8>	execute query

8.3 Table A Input Form

You can enter the data into Table A using this input form. The primary key for Table A is composed of three fields: AART_ID, ASPE_ID and AMIX_ID. Data for these three fields can only be entered on Page 1. In subsequent pages these three columns are only for display. Portion of the form is depicted in Figure 8-3.

AART_ID

AART_ID is the article ID number. AART_ID should be the same with the ART_ID in the base table.

ASPE_ID

ASPE_ID is the specimen ID number. ASPE_ID is numeric and sequenced by ascending order starting at 1.

AMIX_ID

AMIX_ID is mix ID #; AMIX_ID is a character string with a maximum of 30 characters long.

Other Fields Other fields are either numeric or alphanumeric. Up to 30 characters can be entered in all alphanumeric fields except the note field at the end, which can take up to 240 characters. Refer to Appendix C for definition of each field.

List Of Values In certain alphanumeric fields, a list of acceptable values are listed. You can access that table by pressing <F9>. Then move the cursor to the desired field and press <Enter>.

Most Commonly Used Function Keys

<F9>	go to LIST OF VALUE block.
<F10>	commit change
<F7>	enter query
<F8>	execute query
<enter>	next field
<shft>-<tab>	previous field
<Dn>	next record
<Up>	previous record
<F3>	copy field from previous record

8.4 Table B Input Forms

Table B input form is subdivided into three forms because of its large size. However, it is actually one table and should be treated so. Portion of the forms are shown in Figure 8-4. The

procedures in entering data is identical to Table A input so they are not repeated here.

There are two items needed be aware of. First, the field names for the three fields that comprise the primary key have different first letter designation than that of TABLE A, e.g. BART_ID vs. AART_ID.

Second, to access primary key in Table B Input Forms Part II and Part III, you need to perform enter query and execute query operations: Press <F7>[Enter Query], move cursor to BART_ID, enter the article ID number that you want and then press <F8>[Execute Query].

8.5 Formula/Graph Input Form

You can enter information on formula/graph in this input form as well as assign keywords. The form is depicted in Figure 8-5.

ART_ID

Enter article ID number. It must be a five character string.

F/G NO.

Enter the Formula/Graph designation here. For example, F1 stands for formula no. 1 an article; G1 stands for graph no. 1 for an article. This field is alphanumeric.

DEP VAR

Description of the dependent Variable in a graph. A maximum of 80 charactors can be entered.

IND VAR

Description of independent variables. Up to five independent variables can be entered and each accept up to 80 charactors.

RELATION

Description of the relation between independent variables and dependent variable. For a formula, the equation can be entered here. A maximum of 240 charactors are allowed.

NOTE

Any additional comments can be entered here. A maximum of 240 charactors are allowed.

KEYWORD

You can access the KEYWORD block by pressing <ctrl>-<PgDn>. Select the desired keyword from the REFERENCE KEYWORD LIST block. You can do this by pressing the <Enter> key to jump to the REFERENCE KEYWORD LIST block. Then move the cursor to the desired keyword and press <Enter>. You can return to the main screen by pressing <ctrl>-<PgUp>.

Most Used Function Keys

<F10>	commit
<ctrl>-<PgDn>	go to next block
<ctrl>-<PgUp>	go to previous block
<enter>	next field
<F7>	enter query
<F8>	execute query

8.6 Figures

The image shows a terminal window titled "BASE TABLE INPUT FORM". Inside the window, there are five input fields. The first three are "ART_ID", "YEAR", and "DATA", each with a small rectangular cursor. Below these are "AUTHOR'S NAME" and "TITLE", each with a long horizontal cursor bar. The text is in a monospaced font, typical of a terminal.

FIGURE 8-1 BASE TABLE INPUT FORM

CONCLUSION TABLE INPUT FORM

ART ID	CONCL NO.
<div style="background-color: black; width: 100%;"></div>	<div style="background-color: black; width: 100%;"></div>
<div style="background-color: black; width: 100%; height: 100%;"></div>	

(PAGE 1)

KEYWORD INPUT FORM (CONCLUSION TABLE)

ART ID #	CONCL #	KEYWORD	REFERENCE KEYWORD LIST
<div style="background-color: black; width: 100%; height: 100%;"></div>	<div style="background-color: black; width: 100%; height: 100%;"></div>	<div style="background-color: black; width: 100%; height: 100%;"></div>	<div style="background-color: black; width: 100%; height: 100%;"></div>

(PAGE 2)

FIGURE 8-2 CONCLUSION INPUT FORM

(1) A ART ID	(2) A SPE ID	(3) A MIX ID	(4) CMT TP	(5) CMT QTY	(6) MIN ADM TP	(7) MIN ADM QTY

(PAGE 1)

(1) A ART ID	(2) A SPE ID	(3) A MIX ID	(8) F AGG TP	(9) F AGG QTY	(10) F AGG MOIST	(11) C AGG TP	(12) C AGG QTY	(13) C AGG NMSA	(14) C AGG MOIST	(15) AGG GRADN

(PAGE 2)

FIGURE 8-3 PORTION OF TABLE A INPUT FORM

(48) B ART ID	(49) B SPE ID	(50) B MIX ID	(51) SPE TYPE	(52) SPE SIZE	(53) MOLD TYPE	(54) CAP/GRP TYPE	(55) PLATEN TYPE	(56) GAGE LENGTH

(PAGE 1)

(48) B ART ID	(49) B SPE ID	(50) B MIX ID	(57) STRESS APPL	(58) LOAD/ DISPL/ STRAIN	(59) MOIST COND	(60) AGE AT TEST	(61) STRGTH TEST METHOD

(PAGE 2)

FIGURE 8-4 PORTION OF TABLE B INPUT FORM

TABLE F INPUT FORM

ART_ID	CONCL NO.
<input type="text"/>	<input type="text"/>
DEP VAR	<input type="text"/>
IND VAR1	<input type="text"/>
IND VAR2	<input type="text"/>
IND VAR3	<input type="text"/>
IND VAR4	<input type="text"/>
IND VAR5	<input type="text"/>
RELATION	<input type="text"/>
NOTE	<input type="text"/>

(PAGE 1)

KEYWORD INPUT FORM (FORMULA/GRAPH)

ART ID #	FG ID #	KEYWORD
<input type="text"/>	<input type="text"/>	<input type="text"/>

REFERENCE KEYWORD LIST
<input type="text"/>

(PAGE 2)

FIGURE 8-5 FORMULA/GRAPH INPUT FORM

9

Maintenance Mode

In this chapter each maintenance form will be described in detail.

9.1 Reference Keyword Lists

Input Form for Conclusion Database Reference Keyword List

Input Form for Formula/Graph Database Reference Keyword List

You can add new keywords to the reference keyword lists. These two forms are shown in Figure 9-1 and Figure 9-2. The most updated version of the reference lists are reflected when you access either the Conclusion Input Form or the Formula/Graph Input Form. Each keyword can have up to 30 characters long.

Most Commonly Used Function Keys

<up>	move to previous keyword
<dn>	move to next keyword
<F10>	commit change

9.2 List Of Values Input Form

You can enter additional values into the LISTVAL table, so Table A and Table B can reference them. The form is shown in Figure 9-3.

Enter New Value Entering new value into the LISTVAL table is a three step procedure. First, enter and execute a query to select those records corresponding to the field you want. Second, enter the new value or term. Third, commit the change.

Press <F7>. Move the cursor to FIELD NAME field, and then enter the field name you want to add values. Press <F8> to execute the query and the list of values associated with that field appears on the screen.

Move the cursor to the LIST OF VALUES field and to the next available cell. Enter the new value.

Press <F10> to commit the change.

9.3 Figures

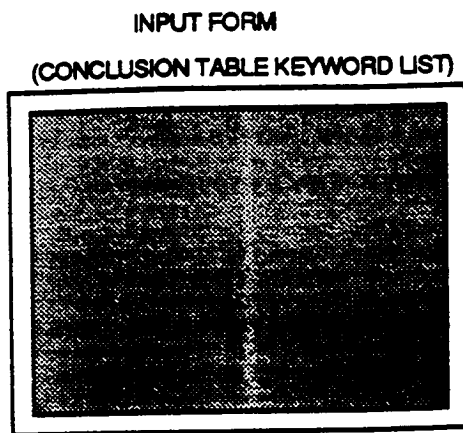
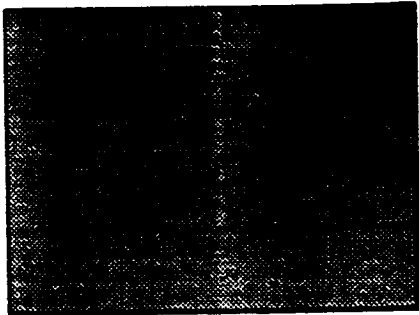


FIGURE 9-1 REFERENCE KEYWORD LIST
(CONCLUSION DATABASE)

INPUT FORM
(FORMULA/GRAPH KEYWORD LIST)



**FIGURE 9-2 REFERENCE KEYWORD LIST
FORMULA/GRAPH DATABASE)**

LIST OF VALUES INPUT FORM
(TABLES A AND B)

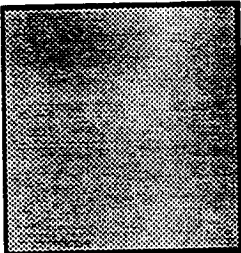
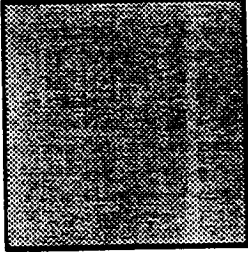
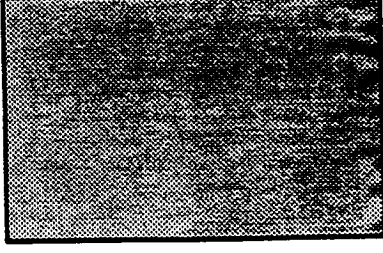
FIELD NAME	LIST OF VALUES	EXPLANATION
		

FIGURE 9-3 LIST OF VALUE INPUT FORM

10

Oracle For 123

In this chapter a set of macros in ORACLE FOR 123 is described. Users can use this set of macros to query Table A and Table B Database.

ORACLE FOR 123 is a Lotus add-in tool. Having Lotus spreadsheet attached to ORACLE RDBM enhances the data manipulation capability of ORACLE. Since numeric data manipulation is the main task in Table A and in Table B, ORACLE FOR 123 presents a better alternative in querying Table A and Table B.

Access Oracle For 123 Exit out to the DOS prompt, then type ORA123 and press <enter>.

Bring Up ABQRY.WK1 The query procedures are stored as a set of macro in a Lotus file, called ABQRY.WK1. Use normal Lotus commands to bring up the ABQRY.WK1.

Query Steps The steps to query table A and table B are stored as menu commands. These are outlined below. You can access the menu commands by pressing <ctrl>-s at any time.

Columns Select this command to choose the fields you want to display. The only enterable field is the DISP while other columns are protected. Only 'N' or 'Y' should be entered in the cells. 'Y' indicate field selected. You can select up to 50 fields at a time. Keep in mind that what you select do not necessarily have to be included in the where/order statement.

Where/Order Select this command to enter the where clause and order clause of the query statement. You can enter up to 10 lines of codes. Be sure you enclose the where clause to ensure

proper operation of SQL statement.

Execute Select this command to execute the query statement. If there is an error, a message will appear on the screen. In that case, select WHERE/ORDER again and edit the statement.

Data Go to the data that the query has generated. The data area starts at A200 cell.

Init Clear all the input. Initialize the Column screen so no fields are selected and clear the WHERE/ORDER screen.

UNFREEZ In order to protect macros from accidental erasing, portions of the spreadsheet are protected at times. UNFREEZ disable all protection. In rare occasions that you want to use this option, be careful not to erase program codes.

HELP Go to the help screen for quick instruction on how to run the program.

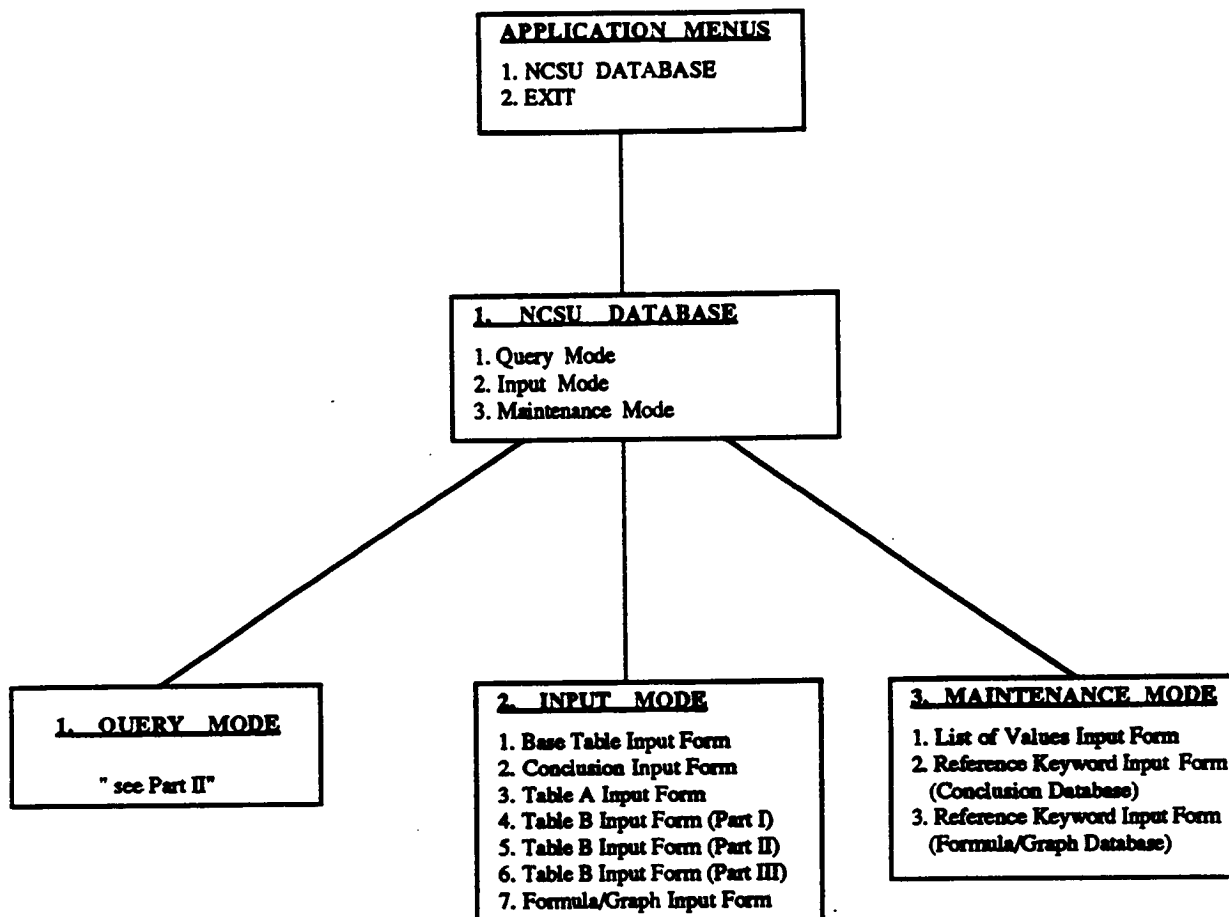
Advantages To query table A and table B this way have several advantages over the previous method. They are listed below:

1. You can edit the query statement without starting afresh.
2. You do not have to concern yourself on which tables are involved in a query statement. That is taken care of for you by the macro.
3. There is no 128 character limit.
4. Data obtained can be manipulated further by normal Lotus operations.

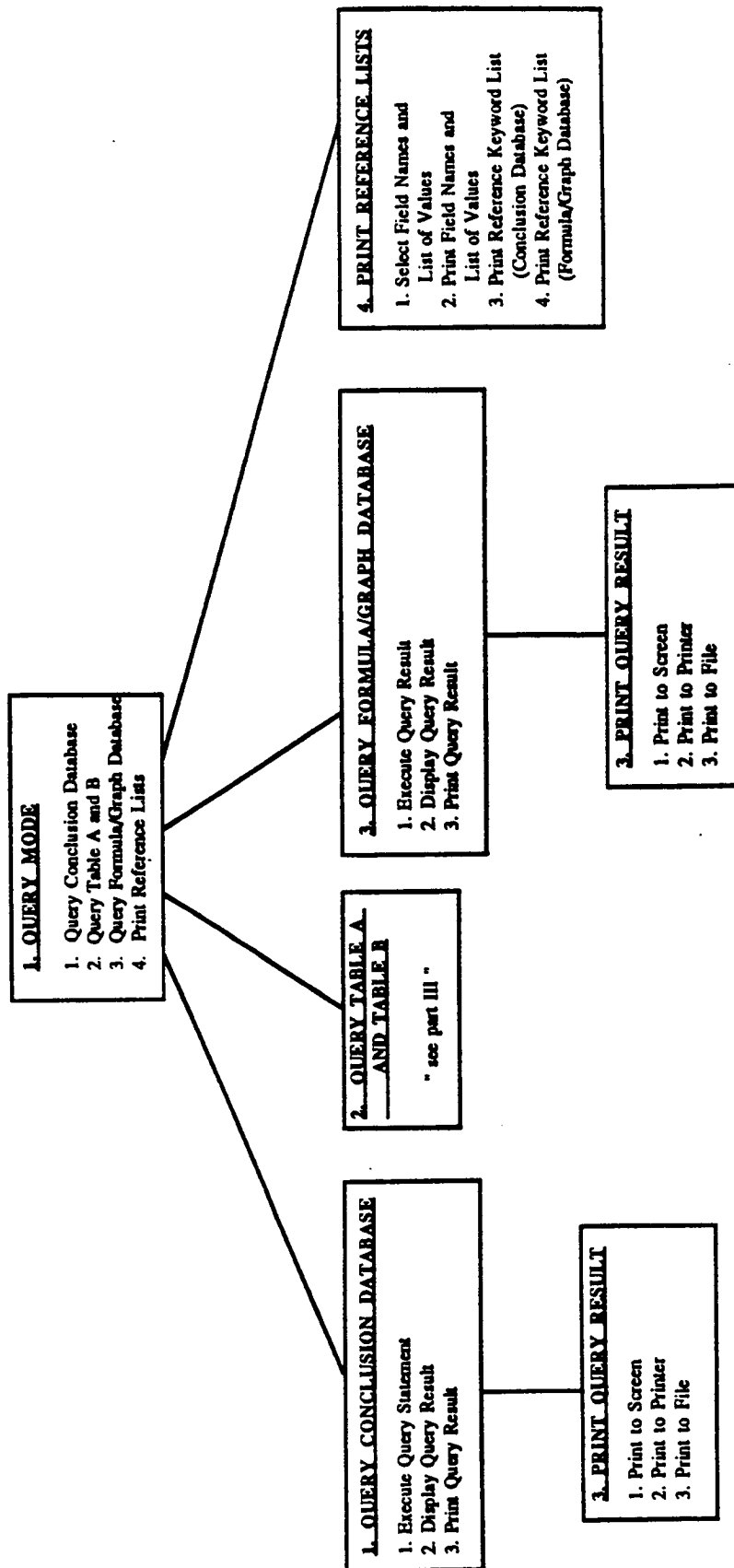
Other Comments Actually, you virtually have all the database management capability that are used in other parts of the NCSU Database program by using ORACLE FOR 123 alone. You can input data as well as do complex queries. Refer the ORACLE FOR 123 User's Manual for detail instructions.

Appendix A

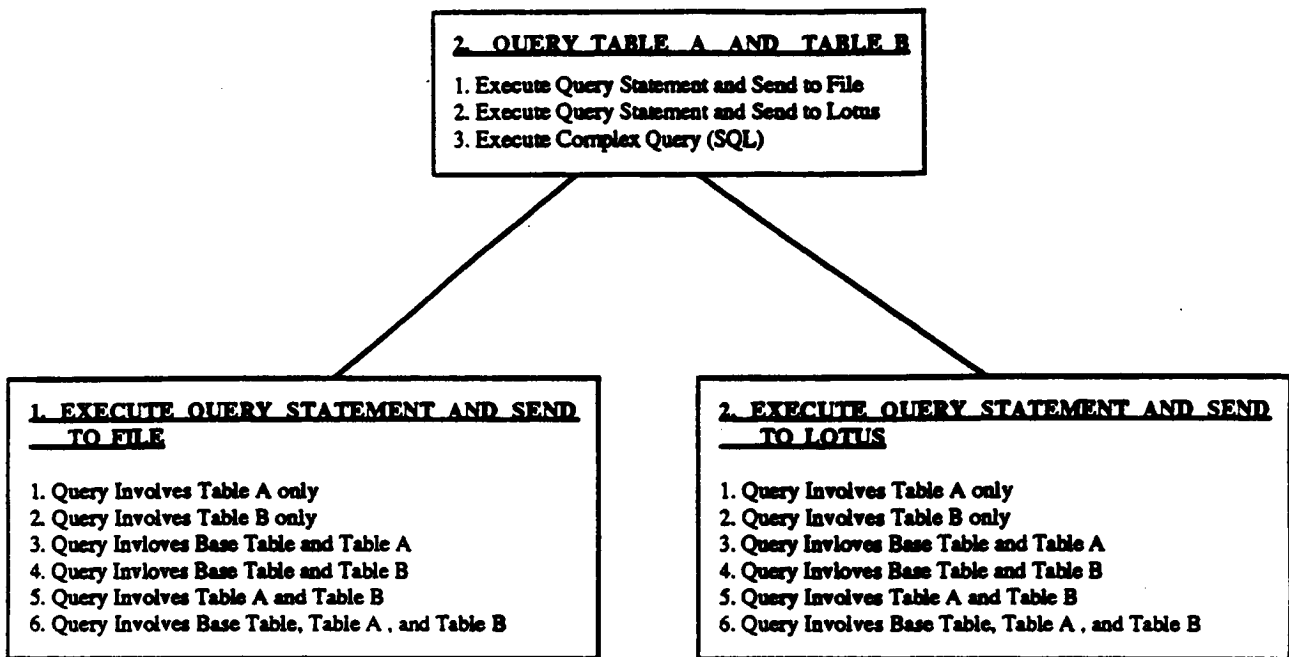
Application Menus Chart



APPLICATION MENU (PART I)



APPLICATION MENUS (PART II)



APPLICATION MENUS (PART III)

Appendix B

Sample Database

Base table

Art_ID	Year	Author	Title
-----	-----	-----	-----
A2012	1983	BROOKS, J. J.	PROPERTIES OF ULTRA-HIGH-STRENGTH CONCRETE CONTAINING A SUPERPLASTICIZER
A2009	1981	CARRASQUILLO, R.L.	PROPERTIES OF HIGH STRENGTH CONCRETE SUBJECT TO SHORT-TERM LOAD

Conclusion table

Art_ID	Concl#	Conclusion
-----	-----	-----
A2012	1	Concretes with and without superplasticizers were tested under short term and long term (one year) to quantify the effects. Eighteen 4 in. cubes were tested for compressive strength. Eighteen 6x12 in. cylinders were tested for indirect tensile strength. Eight 4x4x20 prisms were tested for dynamic modulus of elasticity. Fourteen 3x10 in. cylinders were tested for swelling and creep. Concrete strengths based on cube tests were reported up to 13,620 psi.

Keyword table (keyword table for Conclusion database)

Art_ID	Concl#	Keyword
-----	-----	-----
A2012	1	COPRESSIVE STRENGTH
A2012	1	CREEP
A2012	1	MODULUS OF ELASTICITY
A2012	1	SHRINKAGE
A2012	1	SUPERPLASTICIZERS
A2009	1	HIGH STRENGTH
A2009	1	MODULUS OF ELASTICITY
A2009	1	TESTING

Table A table

(1) Article ID #	(2) Specimen ID #	(3) Mix ID	(4) Cement Type	(5) Cement Qty (pcy)	(9) F. Agg Qty (pcy)	(13) C. Agg Qty (pcy)
A2012	1	500P	I	876	809	2083
A2012	2	500P	I	876	809	2083
A2012	3	500P	I	876	809	2083
A2012	4	500P	I	876	809	2083
A2012	5	500A	I	902	833	2142
A2012	6	500A	I	902	833	2142

(1) Article ID #	(2) Specimen ID #	(3) Mix ID	(16) Chem 1 Type	(17) Chem 1 Qty (oz/cwt)	(25) W/(C+F)	(31) Work'ty Test Mthd
A2012	1	500P			0.36	SLUMP
A2012	2	500P			0.36	SLUMP
A2012	3	500P			0.36	SLUMP
A2012	4	500P			0.36	SLUMP
A2012	5	500A	SUPERPLASTICIZER 8		0.27	SLUMP
A2012	6	500A	SUPERPLASTICIZER 8		0.27	SLUMP

(1) Article ID #	(2) Specimen ID #	(3) Mix ID	(32) Work'ty Value (in)	(41) Curing Mthd (days)	(42) Curing Time
A2012	1	500P	1.5	WATER	1
A2012	2	500P	1.5	WATER	28
A2012	3	500P	1.5	WATER	365
A2012	4	500P	1.5	WATER	28
A2012	5	500A	1.375	WATER	1
A2012	6	500A	1.375	WATER	28

Table B table

(48) Article ID #	(49) Specimen ID #	(50) Mix ID Type	(51) Specimen	(52) Specimen Size	(60) Age at Testing	(62) Strength Test	(66) Ult Stress 1
A2012	1	500P	CUBE	4"	1	FC	5293
A2012	1	500P	PRISM	4"x4"x20"	1		
A2012	1	500P	PRISM	4"x4"x20"	1		
A2012	1	500P	CYL	6"x12"	1	FR	421
A2012	2	500P	CUBE	4"	28	FC	11310
A2012	2	500P	PRISM	4"x4"x20"	28		
A2012	2	500P	PRISM	4"x4"x20"	28		
(48) Article ID #	(49) Specimen ID #	(50) Mix ID	(78) Modulus Type	(79) Modulus Value	(81) Creep Stress	(82) Sp Creep	(83) Age at Loading,
A2012	1	500P					
A2012	1	500P	SEC_E	4.34			
A2012	1	500P	DYN_E	5.7			
A2012	1	500P					
A2012	2	500P					
A2012	2	500P	SEC_E	5.52			
A2012	2	500P	DYN_E	6.86			
A2012	2	500P					

Table F table (Formula/Graph database)

Art_ID	F/G ID	Dep Var	Ind Var1	Ind Var2	Ind Var3
A2009	G4	Ec	f'c (Cornell, Present Study)	f'c (PCA)	f'c(Pauw)
Ind Var4	Ind Var5	Relation	Note		
		Fig. 5 Static modulus of elasticity versus sqrt(f'c)			

FKW table (keyword table for Formula/Graph database)

Art_ID	F/G ID	Keyword
-----	-----	-----
A2009	1	HIGH-STRENGTH
A2009	1	MODULUS OF ELASTICITY

Appendix C

Field Names and Definitions

FIELD NAMES AND EXPLANATIONS (TABLES A AND B)

TABLE NAME	COL NO. FIELD NAME	EXPLANATION
BASE	0 ART	article ID #
	0 AUTH	author's name
	0 TITLE	article title
	0 YEAR	year of publication
TABLEA	1 AART_ID	article id #
	2 ASPE_ID	specimen id #
	3 AMIX_ID	mix id #
	4 CMT_TP	cement type
	5 CMT_QTY	cement quantity (pcy)
	6 MIN_ADM_TP	mineral admixture type
	7 MIN_ADM_QTY	mineral admixture quantity (pcy)
	8 F_AGG_TP	fine aggregate type
	9 F_AGG_QTY	fine aggregate quantity (pcy)
	10 F_AGG_MOIST	fine aggregate moisture condition
	11 C_AGG_TP	coarse aggregate type
	12 C_AGG_NMSA	coarse aggregate NMSA (in)
	13 C_AGG_QTY	coarse aggregate quantity (pcy)
	14 C_AGG_MOIST	coarse aggregate moisture condition
	15 AGG_GRADN	aggregate gradation curve (Lotus filename)
	16 CHEM1_TP	chemical admixture type 1
	17 CHEM1_QTY	chemical admixture 1 quantity (oz/cwt)
	18 CHEM2_TP	chemical admixture type 2
	19 CHEM2_QTY	chemical admixture 2 quantity (oz/cwt)
	20 CHEM3_TP	chemical admixture type 3
	21 CHEM3_QTY	chemical admixture 3 quantity (oz/cwt)
	22 PLYMR_TP	polymer type
	23 PLYMR_QTY	polymer quantity (oz/cy)
	24 WATER_QTY	water quantity (pcy)
	25 W_C_RATIO	water/cement ratio
	26 BATCH_LOC	batch location
	27 QTY_PRD	quantity produced (cy)
	28 MIX_TM	mixing time (min)
	29 TM_N_DRUM	time in drum (min)
	30 PLAST_TST	plastic test location
	31 WRK_TSTMD	workability test method
	32 WRK_VAL	work'ty value (in or sec based on work'ty type)
	33 AIR_TSTMD	air test method
	34 AIR_TST_VAL	air test value (%)

35 UWT_PLAST	plastic unit weight (pcf)
36 UWT_AIRDRY	air dry unit weight (pcf)
37 CON_TEMP	concrete temperture (deg F)
38 MEMBER_TP	member type
39 PLACE_MD	placement method
40 FNH_MD	finishing method

FIELD NAMES AND EXPLANATIONS (TABLES A AND B)

TABLE NAME	COL NO. FIELD NAME	EXPLANATION
TABLEA	41 CUR_MD	curing method
	42 CUR_TM	curing time (min)
	43 TREAT_MD	treatment method
	44 SERV_COND	service condition
	45 INIT_SET	initial set (min)
	46 FIN_SET	final set (min)
	47 MIX_NOTE	mix note
TABLEB	48 BART_ID	article ID #
	49 BSPE_ID	specimen ID #
	50 BMIX_ID	mix ID #
	51 SPE_TP	specimen type
	52 SPE_SZ	specimen size
	53 MOLD_TP	mold type
	54 CAPGRIP_TP	cap or grip type
	55 PLATN_TP	planten type
	56 GAGE LENG	gage length (in)
	57 STRS_APPLN	stress application method
	58 LD_DIS_STRN	load/stress/strain rate
	59 MOIST_COND	moisture condition at test
	60 AGE_TST	concrete age at test (days)
	61 STRGTH_TSTM	strength test method
	62 STRGTH_TSTTP	strength test type
	63 PK_STR	peak stress in principal dir (psi)
	64 PK_STRS2	peak stress in y dir in biaxial test (psi)
	65 PK_STRS3	peak stress in z dir in triaxial test (psi)
	66 ULT_STRS1	ult. stress in principal dir. (psi)
	67 ULT_STRS2	ult. stress in y dir in biaxial test (psi)
	68 ULT_STRS3	ult. stress in z dir in triaxial test (psi)
	69 PK_STRN1	peak strain in principal dir. (10 ⁻⁶)
	70 PK_STRN2	peak strain in y dir in biaxial test (10 ⁻⁶)
	71 PK_STRN3	peak strain in z dir in triaxial test(10 ⁻⁶)
	72 ULT_STRN1	ult. strain in principal dir.(10 ⁻⁶)
	73 ULT_STRN2	ult. strain in y dir in biaxial test (10 ⁻⁶)
	74 ULT_STRN3	ult. strain in z dir in triaxial test(10 ⁻⁶)
	75 POISN_1	uniaxial Possion's ratio
	76 POISN_MULT	multiaxial Possion's ratio
	77 PRMRY_FAIL	primary failure mode
	78 MOD_TP	modulus type

79 MOD_VAL	modulus value (10^6 psi)
80 THERM_COEFF	thermal coefficient (millions/deg F)
81 CRP_STRS	creep stress level (% of f'c)

FIELD NAMES AND EXPLANATIONS (TABLES A AND B)

TABLE NAME	COL NO. FIELD NAME	EXPLANATION
TABLEB	82 SP_CRP	specific creep (ustrain/psi)
	83 AGE_LOAD	concrete age at 1st creep load(days)
	84 CRP_TM	creep time (days)
	85 SHRK_TSTMD	shrinkage test method
	86 SHRK_VAL	shrinkage strain (10 ⁻⁶)
	87 SHRK_TM	shrinkage time (days)
	88 CYCL_FATG	cyclic frequency(fatigue) (cycl/sec)
	89 MAX_CYCL_STRS	maximum cyclic stress (psi)
	90 MIN_CYCL_STRS	minimum cyclic stress (psi)
	91 LD_CYCLNO	number of load cycle(N)
	92 MOD_N	modulus at N cycles
	93 STRGTH_N	strength at N cycles
	94 PK_STRN_N	peak strain at N cycles
	95 PERM_TSTMD	permeability test method
	96 PERM_VAL	permeability value (cm/sec)
	97 PORO_TSTMD	porosity test method
	98 PORO_VAL	porosity value (%)
	99 PORO_DISTR	porosity distribution (Lotus file name)
	100 ABRSN_TSTMD	abrasion test method
	101 ABRSN_RSIST	abrasion resistance (% mass loss)
	102 FREZ_TSTMD	freezing test method
	103 FREZ_RATE	freezing rate (deg F/hr)
	104 AGE_1STFREZ	age at first freeze (days)
	105 DUR_FACT	durability factor
	106 LD_RESP_NOTE	load response note

Appendix D

Table Joins

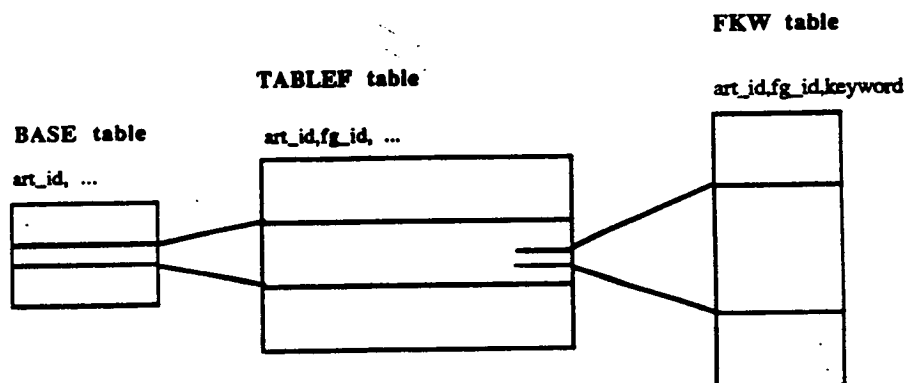
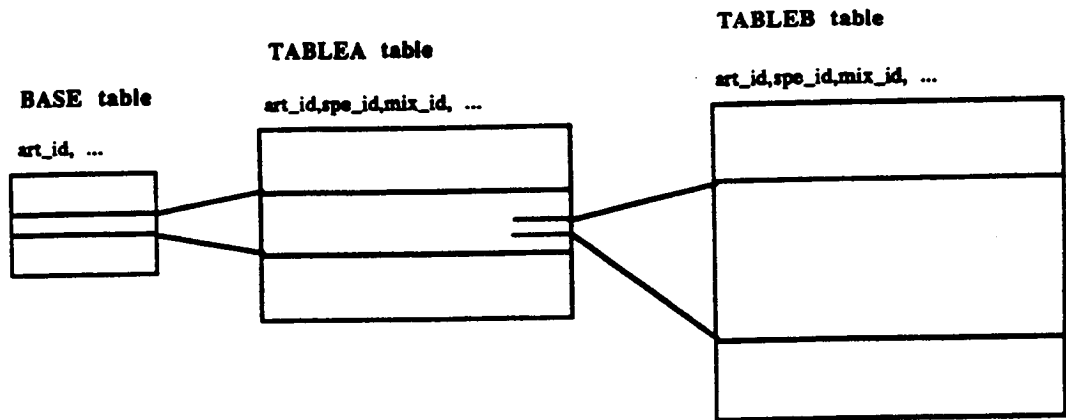
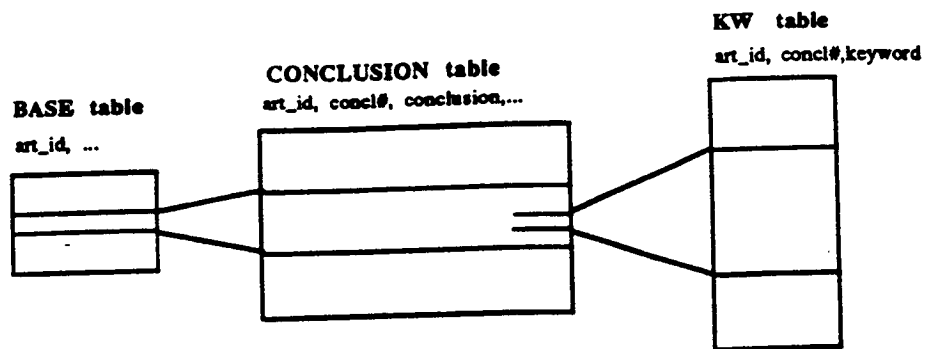


TABLE JOINS FOR NCSU DATABASE

Appendix E

Complex Query

While NCSU Database Program provides extensive query capabilities, to fully utilize its potential, you may want to perform queries that are beyond what is provided. NCSU Database Program provides a means to access Oracle RDBM directly where complex query commands can be executed. In this appendix the situation that warrant complex queries will be described and corresponding query command will be suggested.

Warning

To perform correct query operations, you need to be familiar with SQL language as well as the Table A and Table B Database structure. Otherwise, it is easy to extract erroneous information. It is assumed here that you understand the SQL language fairly well. If you are not, you definitely want to study SQL*Plus User's Guide before you attempt to perform complex queries. Chapter 6 and Chapter 7 of SQL*Plus User's Guide are especially important.

Situation That Warrant Complex Query

The numeric part of NCSU Database Program, Table A and Table B Database, is structured so that individual specimen's test results are stored as one row of data in a table. Thus, different specimens that are made of same mix but are tested for different mechanical properties would have the test results stored in different rows. Consequently, a query that involves different mechanical properties may leave out some essential information. For example, examine the following sample data:

BART_ID	BSPE_ID	BMIX_ID	ULT_STRS1	CRP_STRS
A2000	1	I	6000	
A2000	2	I		40

Both specimen 1 and 2 are made of same mix, Specimen 1 is tested for compressive strength(6000 psi) and Specimen 2 is tested for creep stress(40 % of compressive strength).

A user who wants to do a comparison of compressive strength and creep strength would be tempted to write the where clause such as :

```
ULT_STRS1 >=5000 AND CRP_STRS >=40
```

However, this where clause would not select these two records because neither record satisfy the search criteria.

Recommended Query Command

It is possible to extract such information described above. Since in SQL a table can be treated as two different tables, consequently, a table can be joined by itself. In the example above all mechanical properties are stored in Table B, then you can write a SQL commands in the following form:

```
SELECT [TAB1.ULT_STRS1, TAB2.CRP_STRS,...]  
FROM TABLEB TAB1, TABLEB TAB2  
WHERE TAB1.BART_ID=TAB2.BART_ID AND TAB1.BMIX=TAB2.BMIX  
AND (ULT_STRS1 > =5000 AND CRP_STRS > =40)
```

Such SQL statement extracts the correct information. Notice that TAB1 and TAB2 are synonyms of Table B and are joined together based on article ID numbers and mix ID numbers. Notice also that the specimen ID numbers are not joined.

Table B is a big table, and a join operation combining two big tables involves a lot of data and will require a lot more processing time. Unless your system is fast, be prepared to accept slower performance.

Above query command introduces the concept of joining table by itself. Depending on your needs, some variations of query commands may be required.

Recommendation

Complex queries need time to formulate and refine. Since SQL*Plus provides the means to save query commands in batch files, you can build a library of batch files. So if similar queries are needed, you do not need to start from scratch.

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